Claims

1. A composition comprising
   - a polypeptide which comprises a sequence selected from the group consisting of surface-located Campylobacter polypeptides of SEQ ID NO:1-51, or comprises an antigenic fragment or variant of said sequence,
   - a polynucleotide comprising a sequence encoding said polypeptide,
   - an expression vector comprising a sequence encoding said polypeptide,
   - a recombinant virus or recombinant cell comprising said polynucleotide or said expression vector, or
   - an antibody capable of binding said polypeptide,

   for use as a medicament.

2. The composition of claim 1, wherein the composition comprises
   - a polypeptide which comprises a sequence selected from the group consisting of SEQ ID NO:1-51, or comprises an antigenic fragment or variant of said sequence,
   - a polynucleotide comprising a sequence encoding said polypeptide,
   - an expression vector comprising a sequence encoding said polypeptide, or
   - a recombinant virus or recombinant cell comprising said polynucleotide or said expression vector.

3. The composition of any of the preceding claims, wherein the variant has at least 95%, such as at least 96%, e.g. at least 97%, such as at least 98%, e.g. at least 99% sequence identity to said sequence.

4. The composition of any of the preceding claims, wherein the antigenic fragment comprises less than 99%, such as less than 75%, e.g. less than 50%, such as less than 25%, e.g. less than 20%, such as less than 15%, or e.g. less than 10% of the full-length of said sequence.

5. The composition of any of the preceding claims, wherein the antigenic fragment comprises less than 70 consecutive amino acid residues, e.g. less than 50, such as less than 40, e.g. less than 30, such as less than consecutive 20 residues of said sequence.

6. The composition of any of the preceding claims, wherein the antigenic fragment comprises 6 or more, such as 7 or more, e.g. 8 or more, such as 9 or more, e.g. 10 or more consecutive amino acids of said sequence.

7. The composition of any of the preceding claims, wherein the antigenic fragment comprises one or more residues of a fragment selected from the group consisting of SEQ ID NO:52-119, e.g. two or more consecutive, such as three or more consecutive, e.g. four or more consecutive, such as 5 or more consecutive resides, e.g. 6 or more consecutive residues of a fragment selected from the group consisting of SEQ ID NO:52-119.

8. The composition of any of the preceding claims, wherein the polypeptide comprises a tag, such as a histidine tag.

9. The composition of any of the preceding claims, wherein the recombinant cell is an attenuated or reduced-virulence Escherichia coli cell or an attenuated or reduced-virulence Salmonella cell.

10. The composition of any of the preceding claims, wherein the recombinant cell is alive.

11. The composition of any of the preceding claims, wherein the recombinant cell is dead.

12. The composition of any of claims 2-11, wherein the medicament is a vaccine.

13. The composition of claim 12, wherein the composition comprises an immunogenic carrier, such as a carrier protein, wherein the immunogenic carrier preferably is bound to said polypeptide.

14. The composition of any of claims 12-13, wherein the composition comprises an adjuvant.

15. The composition of claim 1, wherein the composition comprises an antibody capable of binding a polypeptide selected from the group consisting of SEQ ID NO:1-36.

16. The composition of claim 15, wherein the antibody furthermore is capable of binding an intact Campylobacter jejuni cell.

17. The composition of claim 1, wherein the composition comprises an antibody capable of binding a polypeptide selected from the group consisting of SEQ ID NO:37-51 and capable of binding an intact Campylobacter jejuni cell.

18. The composition of any of claims 15 to 17, wherein the antibody is polyclonal.

19. The composition of any of claims 15 to 17, wherein the antibody is monoclonal.

20. The composition of any of claims 15 to 19, wherein the antibody is a human antibody or humanised antibody.

21. The composition of any of claims 15 to 20, wherein the antibody is a binding fragment of an antibody.

22. The composition of any of claims 15 to 21, wherein the antibody has a dissociation constant or Kd less than 5 X 10^{-6}M, such as less than 10^{-6}M, e.g. less than 5 X 10^{-7}M, such as less than 10^{-7}M, e.g. less than 5 X 10^{-8}M, such as less than 10^{-8}M, e.g. less than 5 X 10^{-9}M, such as less than 10^{-9}M, e.g. less than 5 X 10^{-10}M, such as less than 10^{-10}M, e.g. less than 5 X 10^{-11}M, such as less than 10^{-11}M, e.g. less than 5 X 10^{-12}M, such as less than 10^{-12}M, e.g. less than 5 X 10^{-13}M, such as less than 10^{-13}M, e.g. less than 5 X 10^{-14}M, such as less than 10^{-14}M, e.g. less than 5 X 10^{-15}M, or less than 10^{-15}M.

23. The composition of any of the preceding claims, wherein the composition comprises a pharmaceutically-acceptable carrier.

24. The composition of any of the preceding claims, wherein the composition is suitable for systemic administration.

25. The composition of any of the preceding claims, wherein the composition is suitable for intravenous, intramuscular, or subcutaneous administration.

26. The composition of any of the preceding claims, wherein the composition is suitable for oral administration.

27. The composition of any of the preceding claims, wherein the composition is suitable for intranasal administration.

28. An antibody capable of binding a polypeptide selected from the group consisting of SEQ ID NO:1-36.

29. The antibody of claim 28, wherein the antibody furthermore is capable of binding an intact Campylobacter jejuni cell.

30. An antibody capable of binding a polypeptide selected from the group consisting of SEQ ID NO:37-51 and capable of binding an intact Campylobacter jejuni cell.

31. The antibody of any of claims 28 to 30, comprising the features of any of claims 18 to 22.

32. A recombinant cell transformed or transfected with a polynucleotide comprising a sequence encoding a polypeptide, said polypeptide comprising a sequence selected from the group consisting of SEQ ID NO:1-36, or comprising an antigenic fragment or variant of said sequence.

33. The recombinant cell of claim 32, wherein the recombinant host cell is an Escherichia coli or Salmonella cell.

34. The recombinant cell of claim 32 or 33, wherein recombinant the cell is an attenuated or reduced-virulence cell.

35. A recombinant attenuated or reduced-virulence Escherichia coli or recombinant attenuated or reduced-virulence Salmonella cell transformed or transfected with

a polynucleotide comprising a sequence encoding a polypeptide, said polypeptide comprising a sequence selected from the group consisting of SEQ ID NO:37-51, or comprising an antigenic fragment or variant of said sequence.

36. Use of
- a polypeptide which comprises a sequence selected from the group consisting of SEQ ID NO:1-51, or comprises an antigenic fragment or variant of said sequence,
- a polynucleotide comprising a sequence encoding said polypeptide,
- an expression vector comprising a sequence encoding said polypeptide, or
- a recombinant virus or recombinant cell comprising said polynucleotide or said expression vector,

for the preparation of a medicament for the immunisation of an animal or human being against Campylobacter, preferably Campylobacter jejuni, infections.

37. The use of claim 36, wherein the immunisation induces a protective immune response.

38. The use of claim 36 or 37, wherein the medicament is a medicament suitable for parenteral, intravenous, intramuscular, subcutaneous, oral or intranasal administration.

39. Use of an antibody capable of binding a polypeptide selected from the group consisting of SEQ ID NO:1-51, preferably an antibody as defined in any of claims 28 to 31, for the manufacture of a medicament for the treatment or prevention of Campylobacter, preferably Campylobacter jejuni, infections in an animal or human being.

40. A method for raising antibodies to a polypeptide selected from the group consisting of SEQ ID NO:1-36 in a non-human animal comprising the steps of
a. providing
- a polypeptide comprising a sequence selected from the group consisting of SEQ ID NO:1-36, or comprising an antigenic fragment or variant of said sequence,
- a polynucleotide comprising a sequence encoding said polypeptide,

- an expression vector comprising a sequence encoding said polypeptide, or
- a recombinant virus or recombinant cell comprising said polynucleotide or said expression vector,

b. introducing a composition comprising said polypeptide, polynucleotide, vector, recombinant virus or recombinant cell into said animal,

c. raising antibodies in said animal, and

d. isolating and optionally purifying the antibodies.

41. A method for raising antibodies to a polypeptide selected from the group consisting of SEQ ID NO:37-51 in an non-human animal, wherein the antibodies are capable of binding an intact Campylobacter jejuni cell, the method comprising the steps of

a. providing

- a polypeptide comprising a sequence selected from the group consisting of SEQ ID NO:37-51, or comprising antigenic fragment or variant of said sequence,
- a polynucleotide comprising a sequence encoding said polypeptide,
- an expression vector comprising a sequence encoding said polypeptide, or
- a recombinant virus or recombinant cell comprising said polynucleotide or said expression vector,

b. introducing a composition comprising said polypeptide, polynucleotide, vector, recombinant virus or recombinant cell into said animal,

c. raising antibodies in said animal,

d. isolating and optionally purifying the antibodies, and

e. selecting antibodies capable of binding an intact Campylobacter jejuni cell.

42. The method of claim 40 or 41, wherein the animal is a transgenic animal capable of producing human antibodies.

43. A method for detecting Campylobacter jejuni or parts thereof in a sample comprising the steps of

a. contacting said sample with an indicator moiety capable of specifically binding a polypeptide selected from the group consisting of SEQ ID NO:1-36, and
b. determining whether a signal has been generated by the indicator moiety, thereby detecting whether said sample contains Campylobacter jejuni or parts thereof.

44. The method of claim 43, wherein the indicator moiety furthermore is capable of binding intact Campylobacter jejuni cells.

45. A method for detecting Campylobacter jejuni in a sample comprising the steps of
a. contacting said sample with an indicator moiety capable of specifically binding a polypeptide selected from the group consisting of SEQ ID NO:37-51, wherein the indicator moiety furthermore is capable of specifically binding intact Campylobacter jejuni cells, and
b. determining whether a signal has been generated by the indicator moiety, thereby detecting whether said sample contains Campylobacter jejuni.

46. The method of any of claims 43 to 45, wherein said indicator moiety does not pass through the outer membrane of a Campylobacter jejuni cell.

47. The method of any of claims 43 to 46, wherein said indicator moiety consist of or comprises an antibody, such as an antibody as defined in any of claims 28 to 31.

48. A method for identifying a binding partner of a polypeptide selected from the group consisting of SEQ ID NO:1-36 or a fragment thereof, comprising the steps of
a. providing a polypeptide selected from the group consisting of SEQ ID NO:1-36 or a fragment thereof,
b. contacting said polypeptide or fragment with a putative binding partner, and
c. determining whether said putative binding partner is capable of binding to said polypeptide or fragment.

49. A method for identifying a compound with antibacterial activity against Campylobacter jejuni comprising the steps of

a. providing a sensitised cell which has a reduced level of a polypeptide selected from the group consisting of SEQ ID NO:1-36, and
b. determining the sensitivity of said cell to a putative antibacterial compound, for instance by a growth assay.

50. A method for identifying a compound with antibacterial activity against Campylobacter jejuni comprising the steps of
a. providing a sensitised cell which has a reduced level of a polypeptide selected from the group consisting of SEQ ID NO:37-51, and
b. determining the sensitivity of said cell to a putative antibacterial compound, for instance by a growth assay, wherein the putative antibacterial compound is not capable of passing through the outer-membrane of a wild-type Campylobacter jejuni cell.

51. A method for identifying an inhibitor of a polypeptide selected from the group consisting of SEQ ID NO:1-36, comprising the steps of
a. providing two cells which differ in the level of a polypeptide selected from the group consisting of SEQ ID NO:1-36,
b. determining the sensitivity of said cells to a putative inhibitor, for instance by a growth assay, and
c. determining whether said two cells are differently affected by the presence of said putative inhibitor.

52. The method of claim 51, wherein the putative inhibitor does not pass through the outer membrane of a Campylobacter jejuni cell.

53. A method for identifying an inhibitor of a polypeptide selected from the group consisting of the polypeptides of SEQ ID NO:37-51, comprising the steps of
a. providing two cells which differ in the level of a polypeptide selected from the group consisting of SEQ ID NO:37-51,
b. determining the sensitivity of said cells to a putative inhibitor, for instance by a growth assay, wherein the putative inhibitor is not capable of passing through the outer membrane of a Campylobacter jejuni cell, and
c. determining whether said two cells are differently affected by the presence of said putative inhibitor.